

Mineral Industry Surveys

For information, contact:

Michael J. Magyar, Vanadium Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4964, Fax: (703) 648-7757
E-mail: mmagyar@usgs.gov

Subina W. Pandey (Data)
Telephone: (703) 648-7966
Fax: (703) 648-7975
E-mail: spandey@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

VANADIUM IN OCTOBER 2003

Reported domestic consumption of vanadium in October 2003 was about 1% more than that of the previous month and was about 3% less than that of October 2002, according to the U.S. Geological Survey. Year-to-date consumption of vanadium from January through October was about 5% less than during the same period in 2002. Consumer stocks of vanadium, in all forms, were 209 metric tons (t) at the beginning of 2003 and 192 t at the end of October.

According to Ryan's Notes (2003b), the range for U.S. ferrovanadium (FeV) prices during October was \$5.372 to \$5.522 per pound of vanadium content, as compared with \$5.372 to \$5.489 in September. European FeV prices ranged from \$10.889 to \$11.089 per kilogram of vanadium content in October as compared with \$11.356 to \$11.556 in September. In October, vanadium pentoxide (V_2O_5) prices ranged from \$2.050 to \$2.150 per pound, as compared with \$2.028 to \$2.128 in September.

The price of FeV in the United States was marginally lower in October compared with that in September, with the price range being narrower. The price of V_2O_5 in the United States was about \$0.05 per pound higher while the price of European FeV decreased by about \$0.40 per kilogram. As the spread between

FeV and V_2O_5 prices decreased, margins for European FeV toll converters tightened (Metal Bulletin Research, 2003). In the United States, FeV spot sales at the end of October were reported in the range of \$5.40 to \$5.60 per pound, and in Europe, most FeV business was done at about \$11.00 per kilogram.

In February 2003 Xstrata, Plc ceased production at its Windimurra plant in Australia owing to poor market conditions. In October 2003, Xstrata announced that it would suspend production at its Vantech operation in South Africa, effective January 1, 2004, as the ore body neared depletion (Ryan's Notes, 2003a). The company decided to put the plant in care and maintenance and to postpone development of the Steelpoordrift and Kennedy's Vale deposits until the vanadium market recovered.

References Cited

- Metal Bulletin Research, 2003, European ferrovanadium prices eroded: Metal Bulletin Research, Ferro-alloys Monthly, no. 134, October 27, p. 15.
Ryan's Notes, 2003a, Vantech closure has little impact on FeV: Ryan's Notes, v. 9, no. 46, November 17, p. 2.
Ryan's Notes, 2003b, [untitled]: Ryan's Notes, v. 9, no. 44, November 3, p. 4.

TABLE 1
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM¹

(Kilograms, contained vanadium)

| | 2002 | | 2003 | | | |
|---------------------------|-------------|---------|----------------------|----------------------|-------------|---------|
| | Consumption | Stocks | September | | October | |
| | | | Consumption | Stocks | Consumption | Stocks |
| Ferrovandium ² | 2,730,000 | 189,000 | 234,000 ^r | 196,000 ^r | 237,000 | 185,000 |
| Vanadium-aluminum alloy | W | W | W | W | W | W |
| Other ³ | 349,000 | 20,200 | 17,700 | 7,350 | 17,100 | 7,340 |
| Total | 3,080,000 | 209,000 | 252,000 ^r | 203,000 ^r | 254,000 | 192,000 |

^rRevised. W Withheld to avoid disclosing company proprietary data; included with "Other."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.

³Includes other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, other specialty chemicals, and items indicated by symbol W.

TABLE 2
U.S. CONSUMPTION OF VANADIUM, BY END USE¹

(Kilograms, contained vanadium)

| | 2002 | 2003 | | |
|--|-----------|----------------------|---------|---------------------------|
| | | September | October | Year to date ² |
| Steel: | | | | |
| Carbon | 731,000 | 63,600 ^r | 60,700 | 639,000 |
| High-strength low-alloy | 900,000 | 78,000 | 77,600 | 770,000 |
| Stainless and heat-resisting | 37,500 | 2,290 | 2,290 | 22,300 |
| Full alloy | 748,000 | 65,000 | 69,100 | 673,000 |
| Tool | 270,000 | 20,700 | 22,900 | 214,000 |
| Total steel | 2,690,000 | 230,000 ^r | 233,000 | 2,320,000 |
| Superalloys | 12,400 | 991 | 1,550 | 11,600 |
| Miscellaneous and unspecified ³ | 382,000 | 21,600 | 20,100 | 195,000 |
| Total consumption | 3,080,000 | 252,000 ^r | 254,000 | 2,530,000 |

^rRevised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes revisions to prior month's data.

³Includes cast irons, alloys excluding steel and superalloys, chemical and ceramic uses, and other miscellaneous and unspecified uses.

TABLE 3
U.S. IMPORTS AND EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOY AND
VANADIUM METAL, INCLUDING WASTE AND SCRAP¹

(Kilograms, gross weight)

| | Aluminum-vanadium master alloy | | Vanadium metal, including waste and scrap | |
|--------------------------|-----------------------------------|------------|--|-------------|
| | Quantity | Value | Quantity | Value |
| Imports for consumption: | | | | |
| 2002 | 97,500 | \$206,000 | 32,300 | \$1,270,000 |
| 2003: | | | | |
| July | 31,800 | 62,100 | 18,000 | 219,000 |
| August | -- | -- | 37,300 | 578,000 |
| September: | | | | |
| Brazil | 19,800 | 44,500 | -- | -- |
| Canada | 17,000 | 33,900 | -- | -- |
| Germany | 1,500 | 19,400 | 8,790 | 100,000 |
| Russia | -- | -- | 162 | 10,000 |
| United Kingdom | -- | -- | 2 | 6,640 |
| Total | 38,300 | 97,700 | 8,950 | 117,000 |
| Year to date | 212,000 | 386,000 | 102,000 | 1,630,000 |
| Exports: | | | | |
| 2002 | 529,000 | 11,700,000 | 49,200 | 898,000 |
| 2003: | | | | |
| July | 1,060,000 | 1,950,000 | 2,080 | 29,300 |
| August | 803,000 | 1,710,000 | 1,110 | 37,700 |
| September: | | | | |
| Canada | 278,000 | 465,000 | -- | -- |
| Denmark | 95 | 2,800 | -- | -- |
| Germany | 272 | 8,000 | 50 | 7,770 |
| Japan | 6,660 | 42,100 | 2,050 | 37,200 |
| Korea, Republic of | 6,370 | 30,900 | -- | -- |
| Malaysia | 1,550 | 45,600 | -- | -- |
| Mexico | 442,000 | 744,000 | -- | -- |
| Taiwan | 9,260 | 39,400 | -- | -- |
| United Kingdom | 9,340 | 23,000 | -- | -- |
| Total | 754,000 | 1,400,000 | 2,100 | 45,000 |
| Year to date | 4,140,000 | 11,800,000 | 189,000 | 3,630,000 |

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND
OTHER OXIDES AND HYDROXIDES OF VANADIUM¹

(Kilograms, contained vanadium)

| | Ferrovanadium | | Vanadium pentoxide (anhydride) ² | | Other oxides and hydroxides of vanadium | |
|--------------------------|---------------|--------------|--|-------------|--|-----------|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| Imports for consumption: | | | | | | |
| 2002 | 2,520,000 | \$19,400,000 | 406,000 | \$1,990,000 | 42,300 | \$560,000 |
| 2003: | | | | | | |
| July | 88,300 | 871,000 | 66,200 | 709,000 | -- | -- |
| August | 140,000 | 1,270,000 | 7,490 | 67,200 | 7,580 | 139,000 |
| September: | | | | | | |
| Austria | 15,100 | 169,000 | -- | -- | -- | -- |
| Canada | 41,400 | 377,000 | -- | -- | -- | -- |
| Czech Republic | 16,300 | 159,000 | -- | -- | -- | -- |
| South Africa | 16,000 | 184,000 | -- | -- | -- | -- |
| Switzerland | 47,600 | 546,000 | -- | -- | -- | -- |
| Total | 136,000 | 1,430,000 | -- | -- | -- | -- |
| Year to date | 805,000 | 7,950,000 | 394,000 | 2,960,000 | 24,800 | 452,000 |
| Exports: | | | | | | |
| 2002 | 142,000 | 1,550,000 | 91,200 | 568,000 | 203,000 | 1,700,000 |
| 2003: | | | | | | |
| July | 21,500 | 294,000 | 25,900 | 217,000 | 79,100 | 436,000 |
| August | 12,100 | 186,000 | 9,160 | 40,000 | 11,800 | 156,000 |
| September: | | | | | | |
| Canada | 14,300 | 227,000 | -- | -- | 18,100 | 242,000 |
| India | -- | -- | -- | -- | 1,370 | 19,700 |
| Mexico | 23,600 | 326,000 | -- | -- | -- | -- |
| Venezuela | -- | -- | 6,000 | 48,700 | -- | -- |
| Total | 37,900 | 553,000 | 6,000 | 48,700 | 19,500 | 262,000 |
| Year to date | 330,000 | 4,530,000 | 185,000 | 1,540,000 | 224,000 | 2,030,000 |

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG¹

(Kilograms, contained vanadium pentoxide)

| | Ash and residues | | Ash and residues (not from the manufacture of iron and steel) | | Slag, from the manufacture of iron and steel | |
|--------------|------------------|-----------|--|-------------|---|--------------|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| 2002 | 3,830,000 | \$520,000 | 10,300,000 | \$1,560,000 | 243,000,000 | \$19,900,000 |
| 2003: | | | | | | |
| July | 14,800 | 2,010 | 1,320,000 | 294,000 | 44,900,000 | 512,000 |
| August | 784,000 | 1,130,000 | 1,370,000 | 309,000 | 40,900,000 | 346,000 |
| September: | | | | | | |
| Canada | -- | -- | 2,130,000 | 352,000 | 29,200,000 | 501,000 |
| Mexico | 1,080,000 | 762,000 | -- | -- | -- | -- |
| Total | 1,080,000 | 762,000 | 2,130,000 | 352,000 | 29,200,000 | 501,000 |
| Year to date | 2,940,000 | 2,090,000 | 10,100,000 | 2,100,000 | 206,000,000 | 3,310,000 |

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS VANADIUM CHEMICALS¹

(Kilograms, contained vanadium)

| | Sulfates | | Vanadates | |
|--------------|----------|-----------|-----------|-----------|
| | Quantity | Value | Quantity | Value |
| 2002 | 14,100 | \$390,000 | 48,100 | \$567,000 |
| 2003: | | | | |
| July | -- | -- | 2,700 | 70,400 |
| August | -- | -- | 16,000 | 181,000 |
| September: | | | | |
| Germany | -- | -- | 6,160 | 105,000 |
| South Africa | -- | -- | 3,130 | 49,100 |
| Total | -- | -- | 9,290 | 154,000 |
| Year to date | -- | -- | 47,600 | 630,000 |

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.